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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,016	02/05/2004	R. David Anderson	20639.001	5324

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EXAMINER	
BANKHEAD, GENE LOUIS	
ART UNIT	**PAPER NUMBER**
3744	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/773,016	ANDERSON, R. DAVID	
	Examiner	Art Unit	
	Gene L. Bankhead	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-8* is/are pending in the application.

4a) Of the above claim(s) *5 and 9-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *08 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Longardner in view of Clark Jr. (US 4617801).

Regarding claims 1 and 6, Longardner discloses a thermal energy storage system connected to an air conditioning system. The system comprises a compressor 132 capable of compressing a refrigerant, a condenser 134 connected to the compressor (see Figure 5), an expansion valve 136 and an evaporator unit 140 in heat exchange relationship with an air stream (column 11 lines 10-23). Longardner further discloses a thermal energy storage unit 112 with a tank 152 having a storage medium and an associated heat exchanger 146 between the condenser and evaporator (column 12 lines 29-37). Longardner further teaches a refrigerant circulating device 156, capable of circulating refrigerant through the heat exchanger, between the tank, condenser and evaporator (column 12 lines 29-37, 62-68 and column 13 lines 1-10 and Figure 5). The refrigerant circulating device includes a prime mover 150 and an auxiliary liquid (column 12 lines 40-44 and Figure 5), with the force of the prime mover exerted on the auxiliary liquid being indirectly transferred to the refrigerant (column 12 lines 45-68 and column 13 lines 1-10).

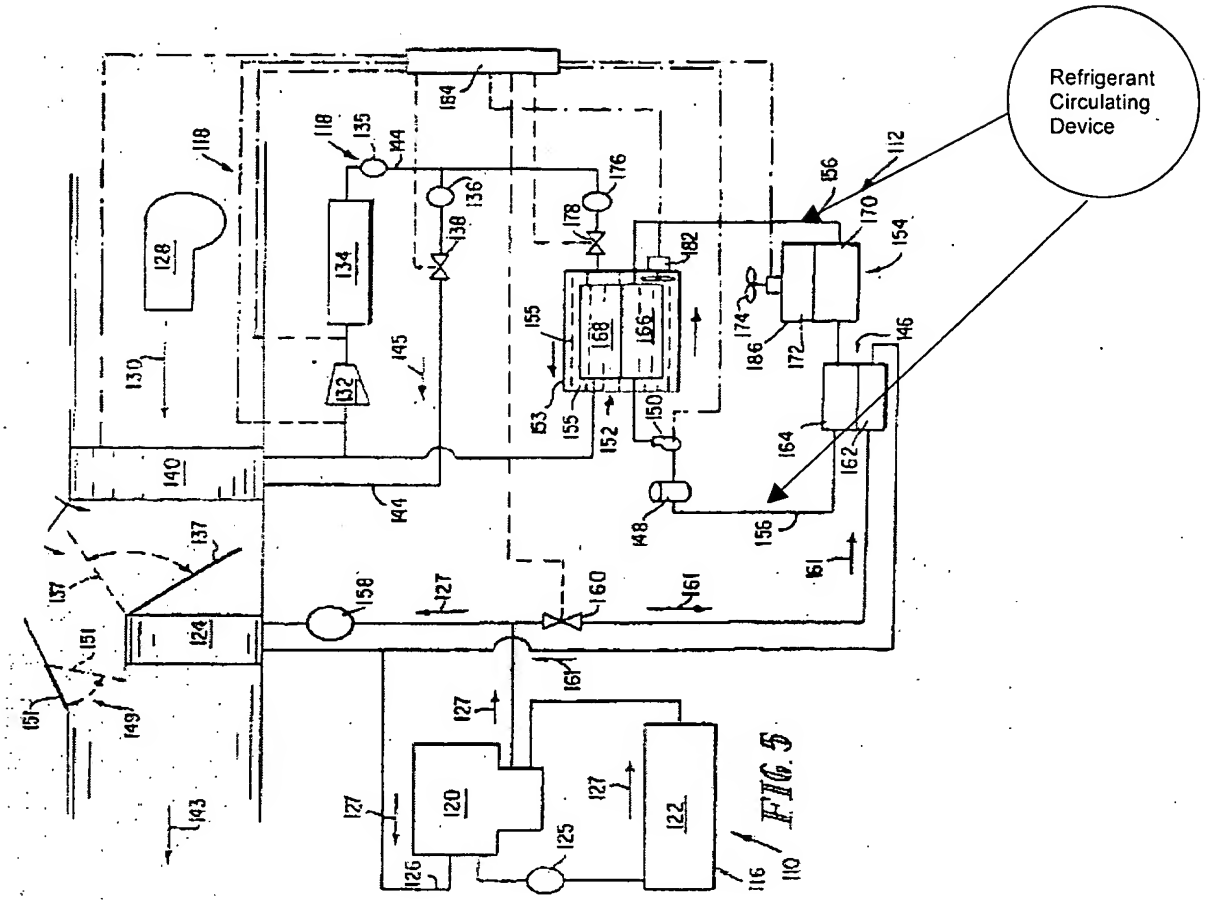

Figure 5 (Longardner)

Claims 1 and 6 differ from Longardner in calling for a prime mover mechanically coupled with fluid cylinders to circulate the refrigerant and further differs in calling for flexible bladders located within each of the fluid cylinders. Longardner teaches a prime mover 150 mechanically coupled to an engine 120 (column 10 lines 42-56 and column 12 lines 29-68 and column 13 lines 1-10). Clark Jr. discloses a thermally powered engine 10 with two fluid cylinders 22, and 24. Longardner teaches a thermal storage system 112, connected to an air conditioning system, coupled to an engine 120 by the

engine coolant loop system 116 (column 10 lines 42-56 and column 12 lines 29-68 and column 13 lines 1-10). Modifying the engine of Longardner with the engine of Clark Jr. enables the prime mover 150 of Longardner to be coupled with the pistons 50 and 56 of cylinders 22 and 24 of the Clark Jr. engine during the pump's 150 operation (column 10 lines 42-56 and column 12 lines 29-68 and column 13 lines 1-10). At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the engine of Longardner with Clark Jr. because coupling piston's with the prime mover greatly increases the amount of work done on the refrigerant being circulated. Simple fluid mechanics teaches the amount of work done on the refrigerant due to the prime mover acting alone is far less than the amount of work done on the refrigerant when the prime mover is coupled with a hydraulic cylinder with fluid. Clark Jr. does not specify oil as the fluid used in the cylinders. It would have been obvious to one of ordinary skill in the art to use oil, as it well known in the art that oil is incompressible and thus increases the efficiency of the hydraulic cylinder. Clark Jr. further teaches flexible bladders 68 and 70 located within each of the fluid cylinders, see Figure 6.

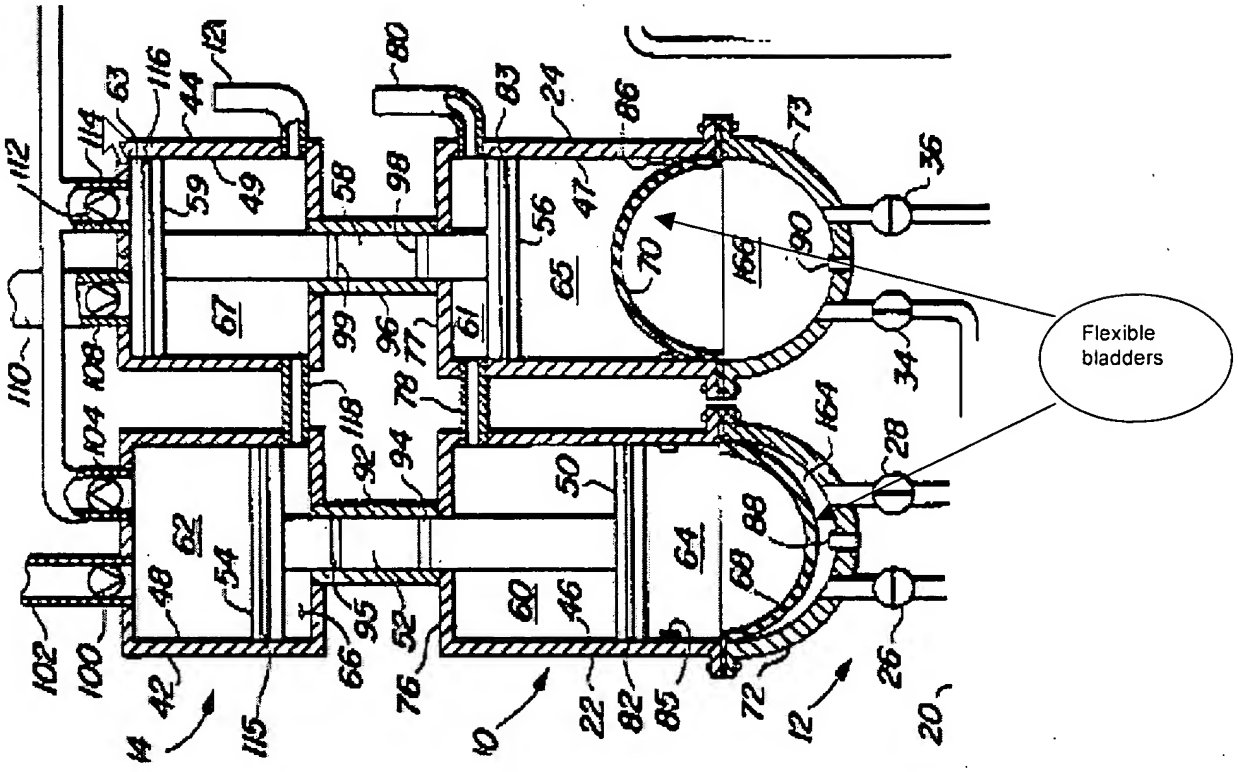

Figure 6 (Clark Jr.)

Regarding claim 2, glycol has a higher relative viscosity and lower relative vapor pressure than refrigerants as it is well known in the art Non-Newtonian fluids, such as glycol, have higher relative viscosities and lower relative vapor pressure than Newtonian fluids, such as refrigerant.

Claim 3 differs from Longardner in calling for the refrigerant Freon. Longardner does not expressly disclose a specific refrigerant. At the time of the invention it would have been obvious to one of ordinary skill in the art to use Freon as it well known in the art that Freon is one of the safest refrigerants available. It is nonflammable, non-corrosive, and non-explosive. It should also be of note a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any

structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

Regarding claim 4 Longardner does not expressly disclose a positive displacement pump as the prime mover. Longardner is silent as to the type of pump used with the thermal storage system. At the time of the invention it would have been obvious to one of ordinary skill in the art to use a positive displacement pump as the prime mover, as it is well known that rotary pumps put out a constant volume of liquid regardless of the pressure. This is important in order to maintain a constant flow rate despite the fluctuation of pressures that occur during the operation of air conditioners.

Regarding claim 8, a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Longardner in view of Papst. Claim 7 differ from Longardner in calling for a prime mover that is powered by a direct current motor and battery. Longardner teaches a pump powered by an electro-mechanical control device. Longardner teaches a relay as the power feed for the pump (column 20 lines 58-68).

Response to Arguments

Applicant's arguments filed 12/01/06 have been fully considered but they are not persuasive.

With regard to claims 1-4 and 6-8 the applicant argues that the invention is patentable over Longardner (US 5553662) in view of Clark Jr. (US 4617801) because Clark Jr. teaches a pair of fluid of fluid cylinders communicating with a prime mover to be used in a thermally powered engine of a vehicle whereas the appellants invention is to be used for a home air conditioning system. Examiner respectfully disagrees. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here. Thus the rejection is upheld. Applicant further argues it would not be logical to incorporate the fluid cylinders of Clark Jr. into the design of Longardner. Examiner respectfully disagrees. Though Longardner deals with a thermal energy storage system "for heating and cooling the interior occupied spaces of a vehicle when the vehicle engine is turned off" and Clark Jr. is used for an operating vehicle, the original motivation to combine references was the additional mechanical advantage the fluid cylinders with pistons provide. One of ordinary skill in the art would have known at the time of the invention would have known hydraulics are extensively used in the art to provide power and conserve energy due to the high mechanical advantage provided. Thus the rejection is upheld.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gene L. Bankhead whose telephone number is (571)-272-8963. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571)-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

CHERYL TYLER
SUPERVISORY PATENT EXAMINER